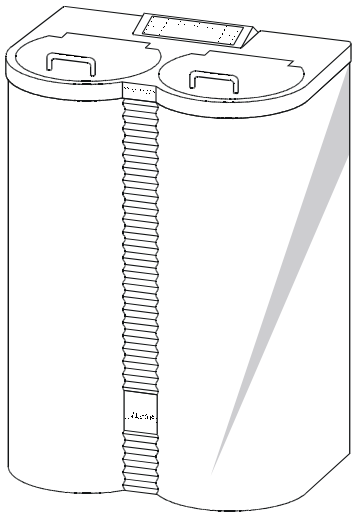
PROTEC® Processor-Technology made in Germany

English

PROMIX A40

Automatic Mixer
Operating Instructions



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Machine No.:	
Type:	
Installation Date:	
Status:	June 2004/3.0
Subject to change	

EU-Declaration of Conformity

PROTEC® Medizintechnik declares, that the product

Description: PROMIX A40®

Machine type: Automatic Mixer

Model no. 1180-1-0000, 1180-2-0000

conforms to the following harmonized standards:

Safety: EN 61010-1 (VDE 0411 Part 1, 03/1994); DIN 1988 T4,12/1988

EMC: EN 50081 Part 1, 03/1993; EN 50082 Part 1, 03/1993

according to the regulations of:

- the Medical Device Directive 93/42/EEC “Class 1”,
- the Low Voltage Directive 73/23/EEC and the
- EMC Directive 89/336/EG

PROTEC® Medizintechnik GmbH & Co. KG, Lichtenberger Strasse 35, D-71720 Oberstenfeld, Germany

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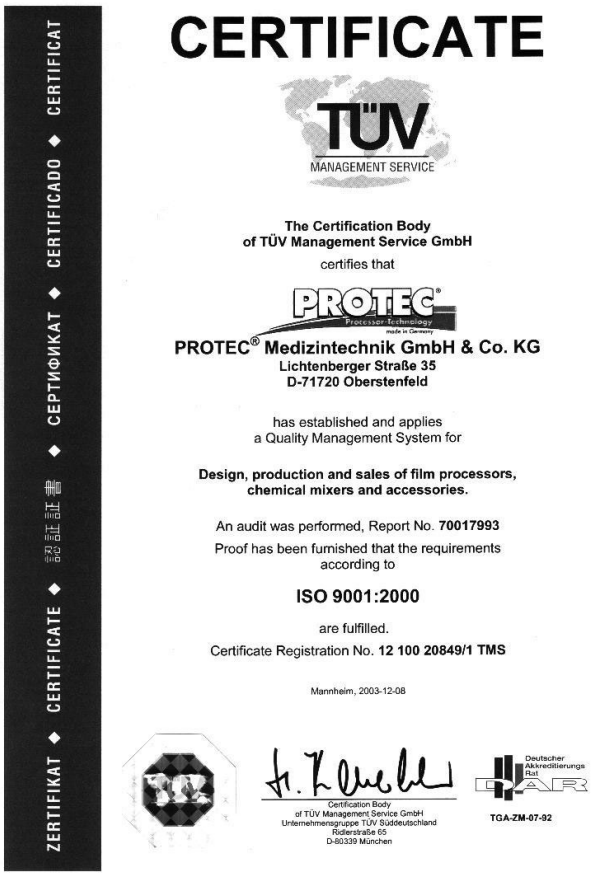
Jochen Krupp (Technical Manager Analog Systems)



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Information on Liability

This manual has been checked for correctness. The instructions and specifications were correct at the time it was published. Future automatic mixers may have modifications without prior notice. PROTEC® Medizintechnik does not take responsibility for damage caused directly or indirectly by error, omission or non-conformity of the manual.

Introduction

The PROMIX A40® is a fully automatic chemical mixing machine for preparing developer and fixer bath chemicals of either powder form or liquid concentrates. All stages are guided and controlled by means of a microprocessor. Thanks to a large reserve tank, up to three machines can be connected and continue to operate, without having to interrupt the working process even during refilling.

Due to its patented design, the PROMIX A40® is easy to operate, reliable, fast and virtually service free. The robust magnetic circulation pumps are resistant to crystalisation and pollution and ensure fast and throrough mixing of the chemicals.

The PROMIX A40® replaces the usual regenerator tanks in the darkroom.

These Operating Instructions contain important instructions for installation, operation and servicing of the machine. Please read the provided information carefully to ensure reliable and satisfactory operation of your PROMIX A40®.

Technical Specifications

Tank volume:	each 40 litre maximum *Mixing volume 20, 25, 30 or 40 litres can be adjusted by setting of float switches.*
Reserve tank:	each 13 litres
Mixing times:	variable, 2, 3, 5, 10, 15, 20, 25, 30 minutes
Pump capacity:	38 l/min
Water connection:	Admissible water pressure: 2-10 bar (29-145 psi), Admissible water temperature: 5-30 °C (41-86 °F)
Water intake:	9 litres per minute and tank
Noise level:	Less than 55 dB(A)
Environmental conditions:	1) Temperature 5-40 °C (41-104 °F), ventilated room, 2) Relative humidity lower than 80 % up to 31 °C, linearly decreasing to 50 % at 40 °C. 3) Height above sea level less than 2000 m (6666 ft). 4) Indoor use
Pollution degree:	2
System protection:	IP 20
Electrical connections:	Electrical specifications are indicated on the model nameplate. Type 1180-1-0000: 220-240 V~, 1.1 A, 50 Hz. Type 1180-2-0000: 220-240 V~, 1.1 A, 60 Hz. Device acc. to IEC 1010 (EN 61010, VDE 0411) overvoltage category II, fuse protection: sb 2 A / 250 V
Power consumption:	0.3 kWh
Weight (unit):	28 kg (61.7 lb) empty, 108 kg (238.1 lb) filled
Dimensions (LxWxH):	height = 93 cm (36.6 '') width = 65 cm (25.6 '') depth = 44 cm (17.3 '')
Floor space required:	0.29 m^2 (3.1 sqft)

Safety Instructions

To ensure safe operation of the mixer, installation and use should always conform to the instructions contained in this manual.
Prevention of water overflow damages: When the machine cannot be supervised, the water supply tap should be shut off.

The developer and fixer chemicals used in the processor should be handled according to the manufacturers instructions. In general: Undiluted chemicals are caustic. For this reason, avoid skin contact and wear suitable equipment for personal protection, such as safety glasses and gloves when handling chemicals. If chemicals have come in your eyes, rinse the eyes immediately with cold, running water for approximately 15 minutes and contact a medical doctor afterwards. Inhalation of chemicals can be dangerous to your health and should be avoided. For this reason, always ensure that the room in which the processor is installed is adequately ventilated.

Environmental regulations regarding the storage and disposal of waste chemicals should be obtained from the local water authorities and complied with.

Before opening the unit, switch off the unit and unplug it from the electrical socket. Service and repairs must be performed by trained service technicians only. Use only manufacturer´s replacement parts.

English

Installation

1. Requirements for Installation

a. Fresh water connection: Shut-off tap, thread with 3/4" outside diameter (washing machine connection), Water pressure 2 - 10 bar (29 - 145 psi).

b. Drainage connection: Plastic tube - inner diameter 50 mm (2”) or larger. Maximum drainage rate 18 l/min.
Regulations for wastewater treatment by local authorities must be observed.

c. Electrical connection: Fused socket with earth connection 220 - 240 V, 50 or 60 Hz, 2 A. It is recommended to install a control switch and fault current circuit breaker with 25 A / 30 mA rated fault current between power socket and power cord.

Electrical connections should be carried out according to regulations by an electrician.

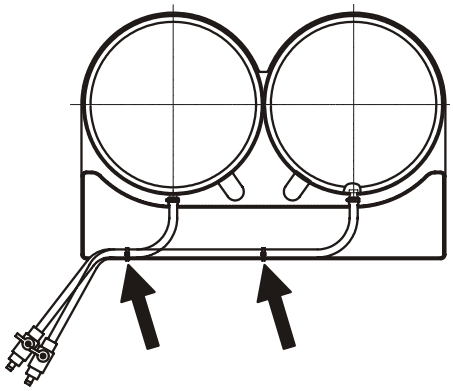
2. Set-Up

a. Unpack the unit and transport it to the installation site.

b. Connect the water supply hose (gray) to the prepared 3/4" shut-off tap.

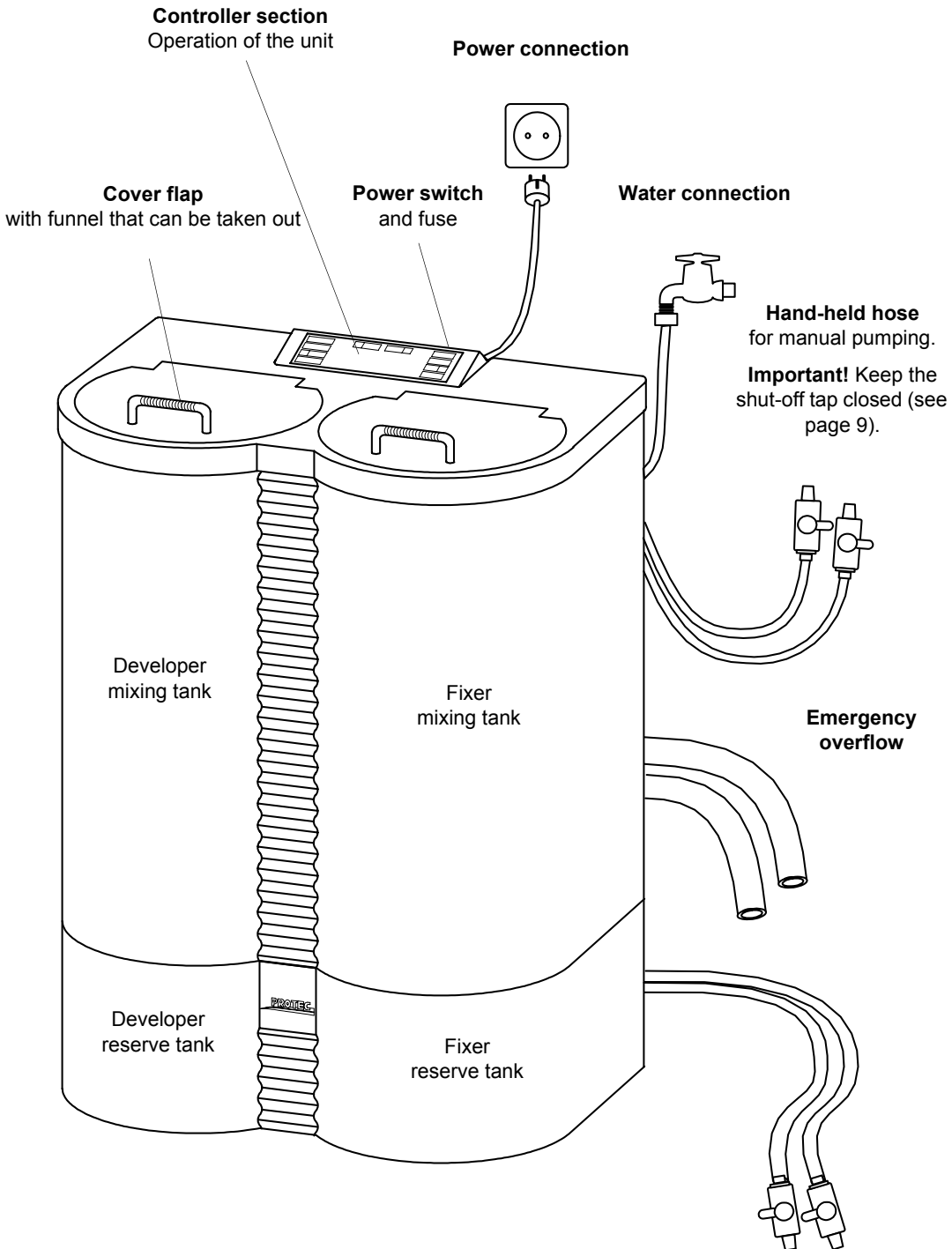
c. Connect the processor´s replenishment connections to the replenishment hoses. Pay attention to the colours: red = developer (left tank), blue = fixer (right tank).

Important!
To avoid damaging the connection fitting, fasten the replenishment hoses at the underside of the mixer using the cable ties supplied (see sketch).



d. Connect the overflow hoses to the prepared drain siphon. Do not bend or kink the hoses. Fasten the hoses using the cable ties supplied. The local regulations for drainage of wastewater must be observed.

e. After the mixer has been installed, a technician should check the function of the water-stop switch. To do so, open the water tap and switch the mixer on. As the water flows into the mixer, lift up the top float switch with your hands. When you lift it to the upper position, the float switch must shut off the water supply. Check this on both mixing tanks.



Please note that the buttons for operation, the hand-held hoses and the covers of the mixing tanks are colour-coded.

RED = developer (left mixing tank)

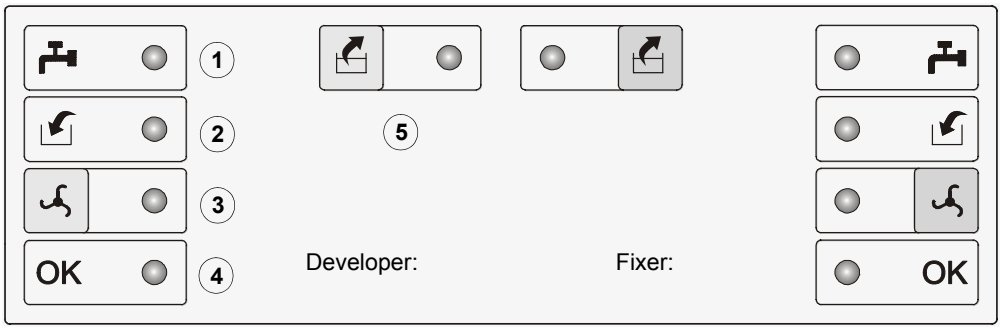
BLUE = fixer (right mixing tank)

English

Operation

Display and buttons for the developer mixing tank (red)

Display and buttons for the fixer mixing tank (blue)



Water supply
Display flashing: open tap or leave it open.

Add chemicals
Display flashing: add chemicals to the respective mixing tank.

Mix
Button starts the mixing process after chemicals have been added.

Mixing completed / Stand-By
Display on: Mixing process is complete, close water tap.

Pump On/Off
Button for manual pumping of chemicals.

Important!
Do not switch the unit off during the mixing cycle. This could result in partially mixed chemicals flowing into the reserve tank. Prepare fresh chemicals only when the mixing tank is empty. Prepare chemicals in the correct tank!

Preparing the Chemicals

When the mixing tank is empty, chemicals can be prepared.

1. Open the water supply tap and close the shut-off taps on the hand-held hoses.
2. Switch the unit on at the power switch. The mixer now automatically fills with water. A beeping sound occurs at an interval and the display *Water supply* (1) flashes.
3. When the mixer has filled up to half full, the water supply stops for a moment. (At the end of the mixing process, more water will be filled in, therefore leave the tap open.)
4. The display *Add chemicals* (2) flashes and a continuous beep is heard. Open the cover flap and fill the powder or liquid concentrate into the respective mixing tank; observe the manufacturer´s instructions.

5. After filling in all the components of the chemicals, press the *Mix* button (3) to start the mixing process. The Mix display is on during mixing.
6. After the initial mixing phase, more water is added until the final level is reached (20, 25, 30 or 40 l). The second mixing cycle completes the mixing process. The *Mixing completed* display (4) indicates that mixing is complete and the unit has changed to stand-by mode. Close the water supply tap now. The ready mixed chemicals now flow into the reserve tank. This can be seen by the dropping liquid level in the mixing tank.

Stand-By Mode

In stand-by mode the mixer monitors the filling level of the chemicals. When the chemicals in the mixing tank have been depleted (reserve tank is still full), an interval sound is heard and the *Water supply* display (1) flashes. Open the water supply tap and start preparing the chemicals as described above.

Important!
Keep the cover flaps of the mixer closed at all times to prevent the chemicals from oxidizing or crystallizing. This will also prevent unpleasant odours from the chemicals.

Manual Pumping Off / Mixing

To fill the processor, e. g. when new chemicals have been prepared, the chemicals can be pumped out of the mixer manually, using the hand-held hoses. To do so, switch the pump on with the *Pump On/Off* button (5). To pump out chemicals, open the shut-off tap on the hand-held hose. Upon completion, be sure to close the shut-off tap on the hand-held hose and switch off the pump.

Important!
The shut-off tap on the hand-held hose must always be closed, unless you are just pumping out chemicals. If the shut-off tap is open during the mixing process, chemicals will escape!

This function can also be used to start an additional mixing process manually, e. g. when hardener or additives are added. Keep the shut-off tap on the hand-held hose closed. Switch the pump on. The mixing process automatically stops after 15 minutes, but can be stopped at any time before by pressing the *Pump On/Off* button(5).

Important!
Do not shift the PROMIX A40® when it is filled!

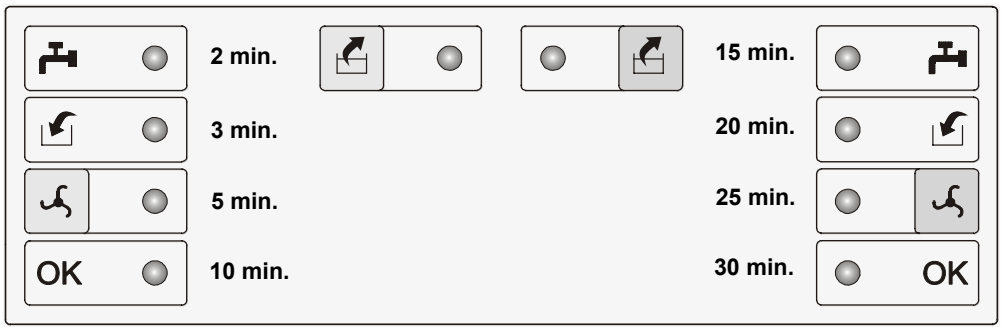
Handle all connections with care to prevent damage.

Attention!
The distance between the PROMIX A40® and an undeveloped X-ray film must be sufficient, because the LED of the display can otherwise cause exposure of the film.

English

Setting the Mixing Time

The mixing time is set using the operating elements.



To change the mixing time, proceed as follows:

1. Switch the unit off.
2. Press one of the two buttons *Mixing* (developer *or* fixer) *and while keeping it pressed* switch the unit on.
3. The respective LED´s light up to indicate the set mixing time.
4. By pressing the *Mixing* button repeatedly, change the mixing time. The adjustable mixing times are selected one after the other: 2, 3, 5, 10, 15, 20, 25 or 30 minutes. The number of LEDs that are on, correspond to the mixing time (see sketch).

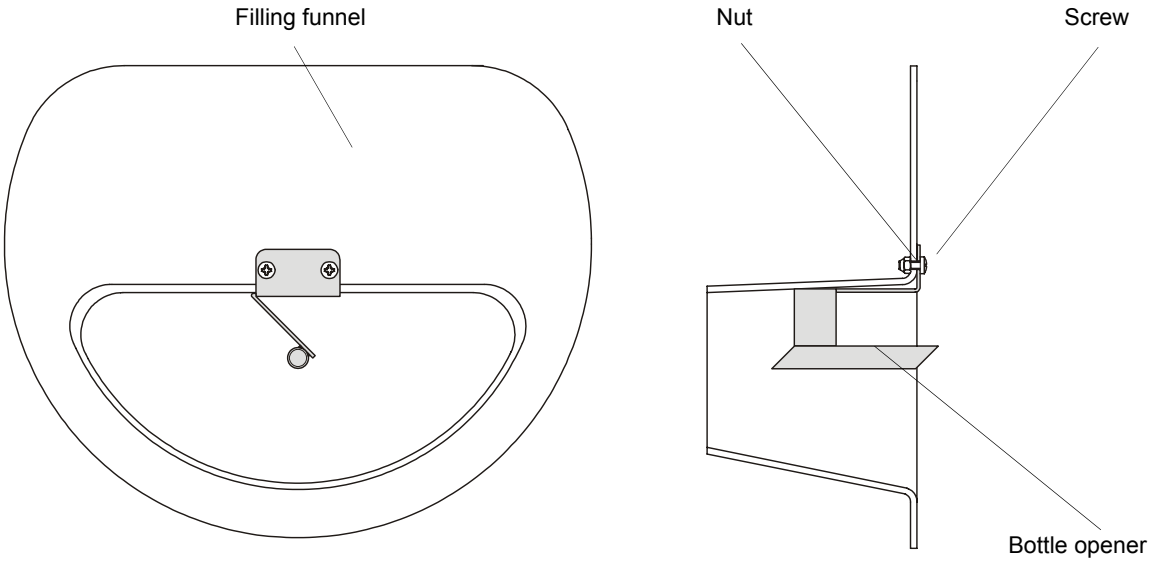
The set mixing time applies to the developer ***and*** fixer mixing processes.

Only change the mixing time when the *OK* display is on or the mixing tank is empty, that is, by no means after fresh water for a new mixing process has already been filled in. While settings are made, the solenoid valve and pump are shut off. Therefore, do not change the mixing time while the mixer fills with water or during the mixing process, as this could dilute the chemicals in the reserve tank.

Bottle Opener

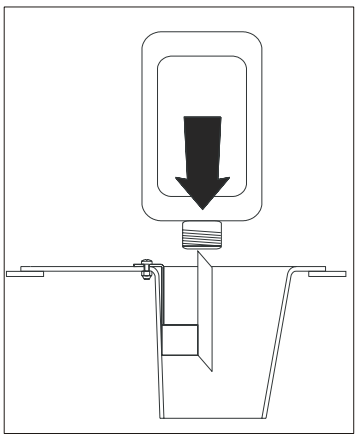
Installation

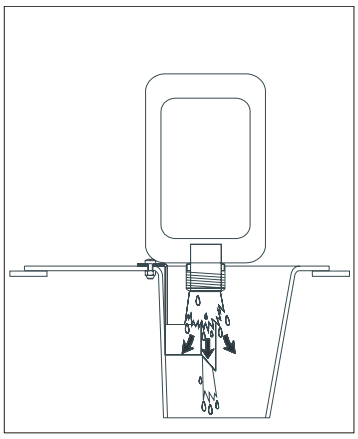
If you are using liquid chemicals supplied in bottles with membrane cover, the bottles can be opened easily and without splashing using the bottle opener. Fasten the bottle opener supplied inside the filling funnel as shown in the drawing.



Use of the Bottle Opener

Place the bottle vertically onto the tip of the bottle opener and press it down.
On bottles with strong plastic covers, place the bottle on the bottle opener so that the tip of the opener rests in the groove in the cover provided for this purpose.





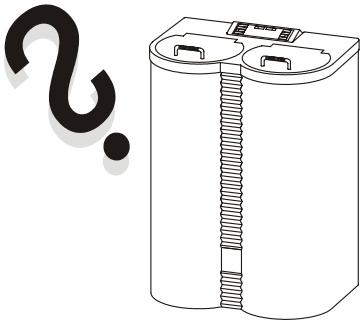
Cleaning and Maintenance

If necessary, the mixer can be cleaned. Wipe the outside surfaces with a wet cloth. Use lukewarm water, but no cleaning agents or solvents. The filling funnel for the powder should be removed and cleaned regularly.

Intermissions

Before going on holiday or when the mixer will not be used for a longer period of time, the chemicals can be pumped out of the mixing tank. This may be done using the mixing pump (see “Manual Pumping Off / Mixing” on page 9). The chemicals in the reserve tank do not need to be pumped out. They can be stored therein for several weeks.

Advice on Unit Errors



Your automatic mixer has been designed for intensive long-term use. However, if irregularities occur, you will find help to locate the problem below. Please check the listed points, before calling your service-technician.

Mixer does not switch on

- Plug the power plug firmly into the socket. Ensure that the power socket conducts power by testing with an appliance (e. g. tablelight).

Mixing process does not start automatically

- One of the float switches in the mixing tank has gotten stuck in the upper position.

No water is supplied

- Open the water supply tap.
- Water pressure in the supply system is too low.

Faulty preparation of chemicals

- Upon a faulty preparation of chemicals you can drain the reserve tank by opening the shut-off tap on the replenishment hose. Before opening, shut off the processor connected and separate it from the mixer. Otherwise the replenishment pumps might draw in air. Rinse the mixer thoroughly several times!

Chemicals not adequately mixed

- Powder concentrate has been stored badly, may be damp and lumpy, causing a bad mixing result. Start an additional mixing cycle by pressing the Pump On/ Off button. After 15 minutes mixing time the pump shuts off (see page 9).

All displays on, water supply indicator flashes

- When the mixing tank was empty, water supply was started, but the half full level has not been reached after 30 minutes. The water supply tap has not been opened or the water pressure is insufficient. To reset the error message, switch the unit off.

All LEDs are flashing

- The bottom float switch has gotten stuck. Loosen the bottom float switch and switch the unit off to reset the error.

Service Manual

Changing the mixing volume

- If you wish to change the mixing volume, the position of the two centre float switches must be changed. The respective positions are indicated in the drawing on page 16.

Setting the mixing times

- The mixing times can be set using the mixing buttons (developer or fixer, see page 10). The mixing time must be set to fit the volume mixed (20, 25, 30 or 40 litres) and the type of chemicals used (liquid concentrate or powder). A smaller volume with liquid concentrate generally requires a shorter mixing time (see page 10).

Trouble Shooting

Unit does not switch on

- Ensure that the power socket conducts power.
- Check the unit´s fuse in the controller housing.
- Check the continuity of the power switch, replace the power switch if necessary.

Unit does not start, no water flows in

- The float switches are not connected or the cables are interrupted.
- The float switch has gotten stuck in the upper end position.
- The electronic controller is defective, replace.

Water supply does not stop

- If the water supply does not stop in the set positions, the respective float switch has gotten stuck in the bottom position or its cable is shorted.
- The electronic controller is defective, replace.

No water supply

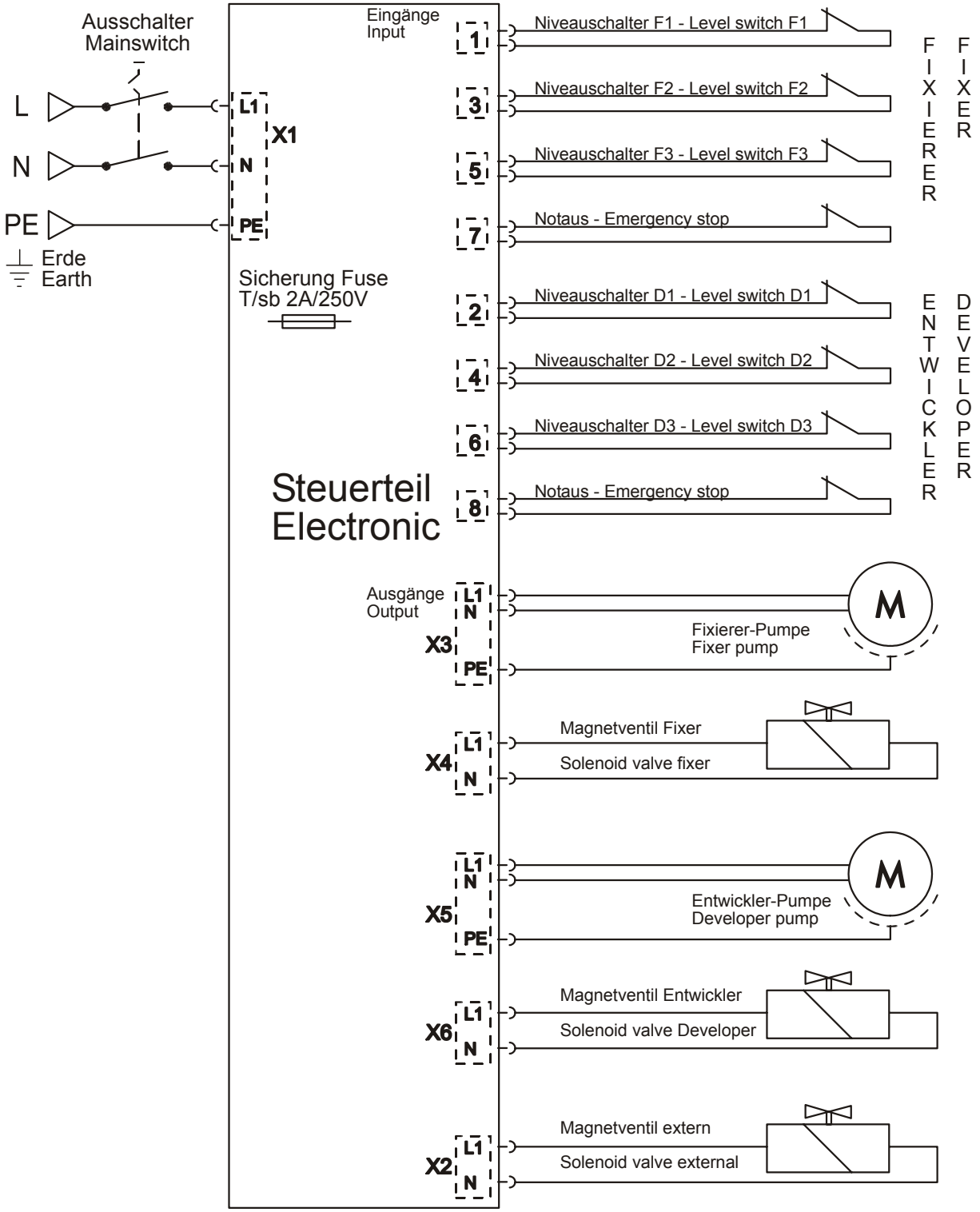
- The water pressure in the water supply system is too low: min. pressure 2 bar.
- The valve opens, but no water flows through: coarse inlet filter of the valve is blocked.

Unit does not mix, pump is not running

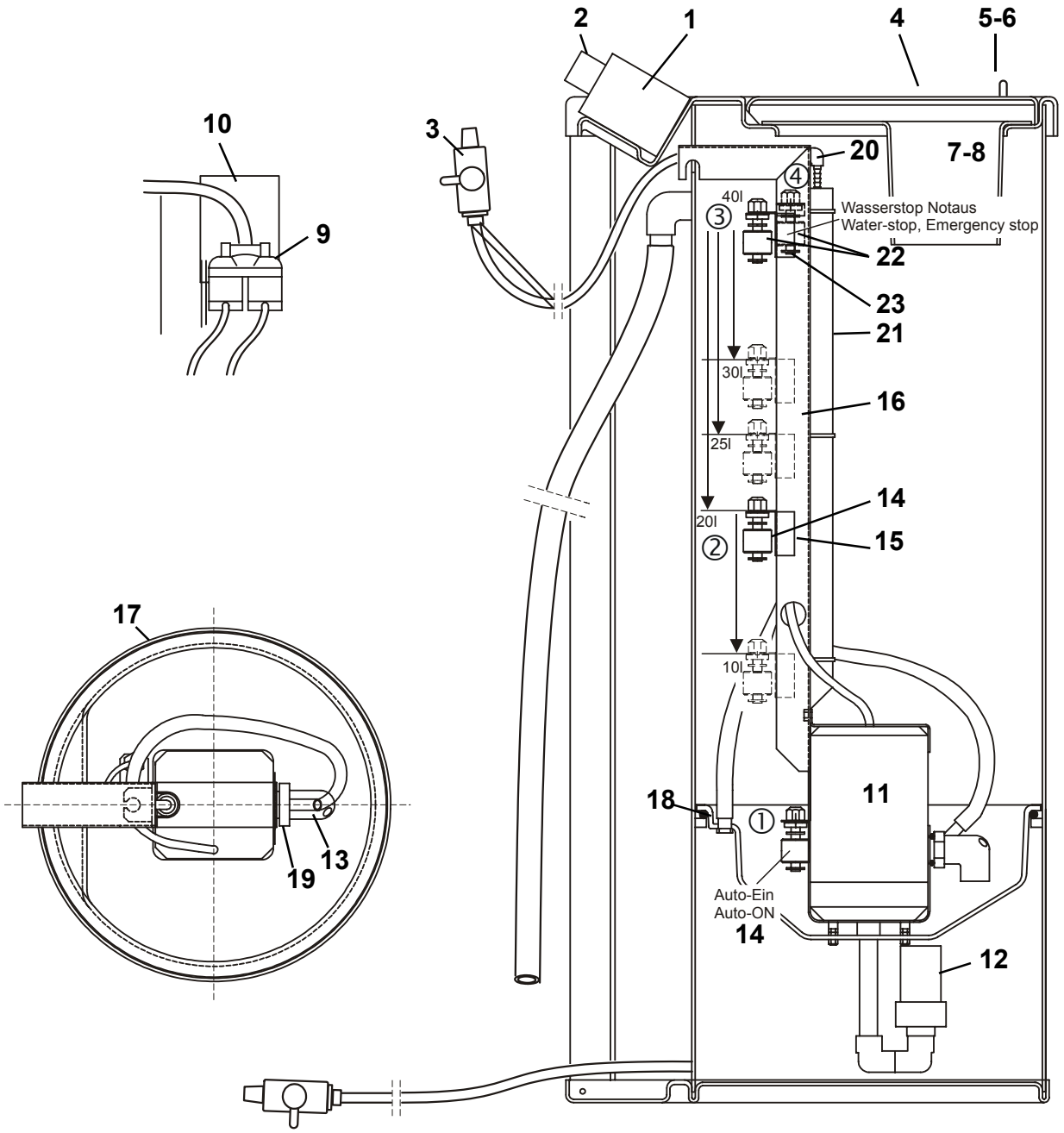
- Check the voltage at the pump connection in the controller, replace the pump if necessary.

Attention!
The pump cannot be repaired, since this would damage its water-tight jacket.

- If there is no voltage at the pump connection, the electronic controller must be replaced.


Ausschalter
Mainswitch
L
N
PE
Erde
Earth
L1
N
PE
X1
Sicherung Fuse
T/sb 2A/250V
Eingänge
Input
1
3
5
7
2
4
6
8
Steuerteil
Electronic
Niveauschalter F1 - Level switch F1
Niveauschalter F2 - Level switch F2
Niveauschalter F3 - Level switch F3
Notaus - Emergency stop
Niveauschalter D1 - Level switch D1
Niveauschalter D2 - Level switch D2
Niveauschalter D3 - Level switch D3
Notaus - Emergency stop
FIXIERER
FIXER
ENTWICKLER
DEVELOPER
Ausgänge
Output
X3
X4
X5
X6
X2
L1
N
PE
M
Fixierer-Pumpe
Fixer pump
Magnetventil Fixer
Solenoid valve fixer
Entwickler-Pumpe
Developer pump
Magnetventil Entwickler
Solenoid valve Developer
Magnetventil extern
Solenoid valve external

English



Position of Float Switches Standard Mixing Volume 40 Litres

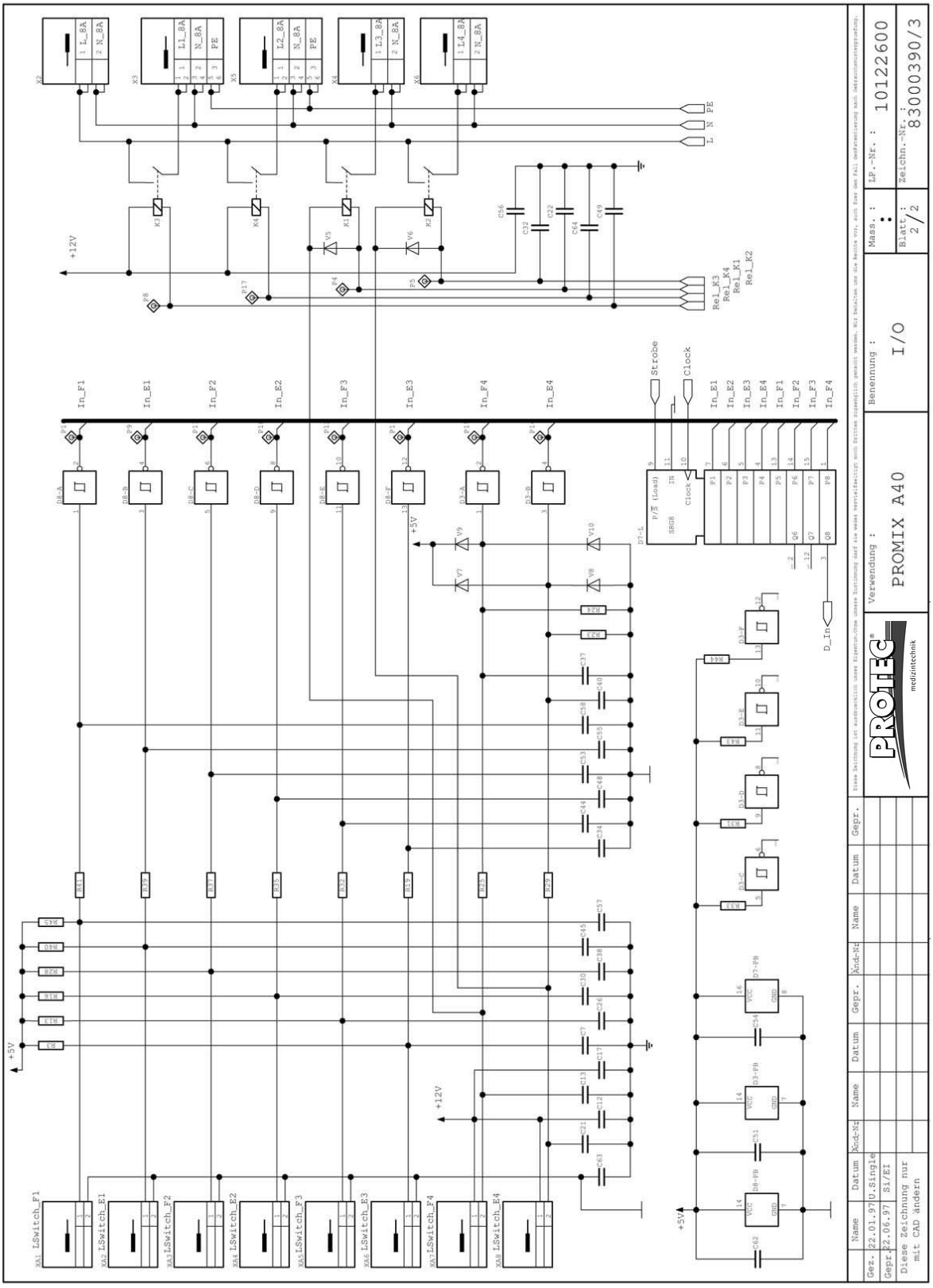
① Auto On float switch (do not change position)

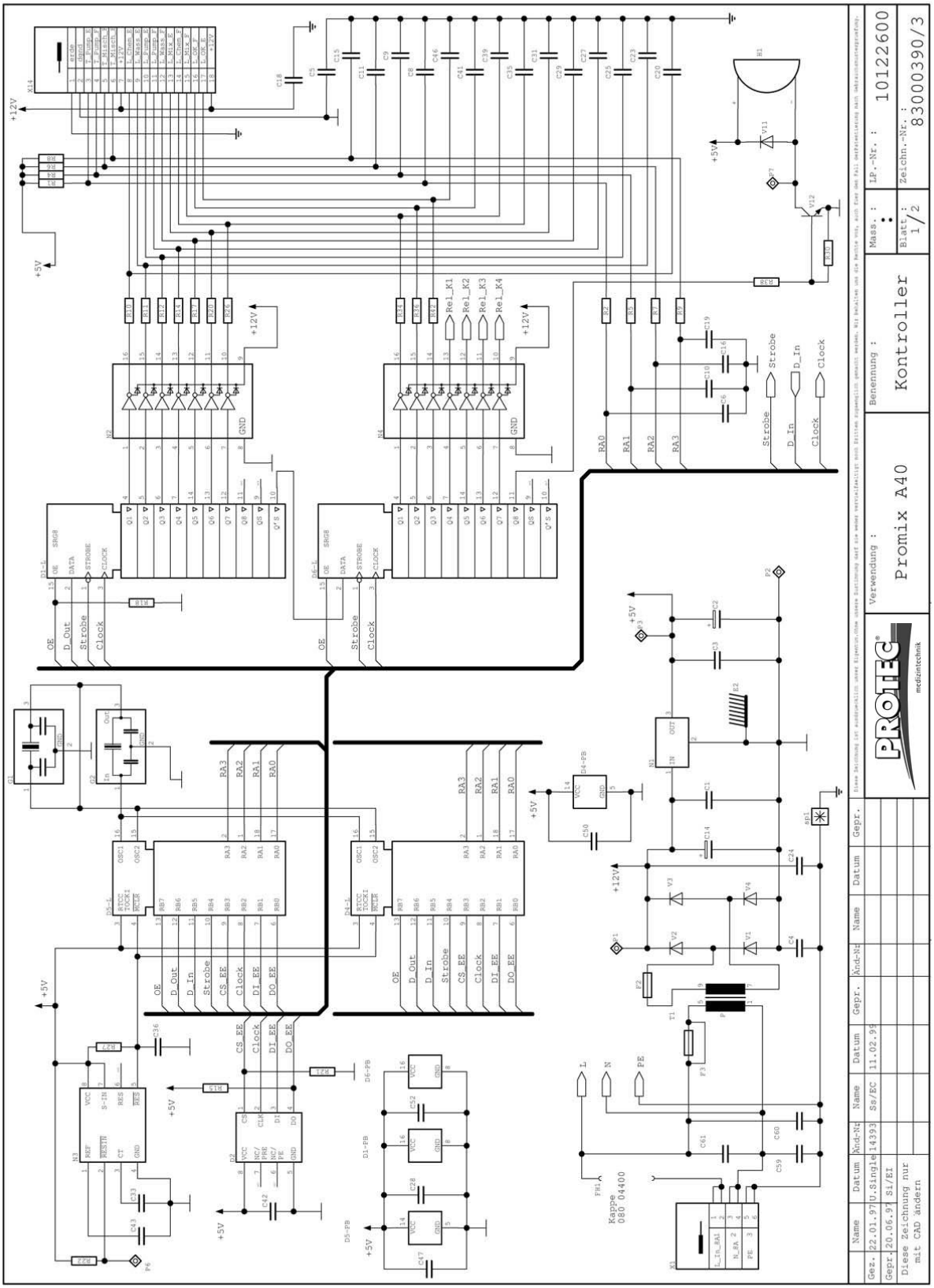
② Half full level - 20 l
Position this float switch in the 10 l position, if the mixing volume is to be set to 20 or 25 litres.

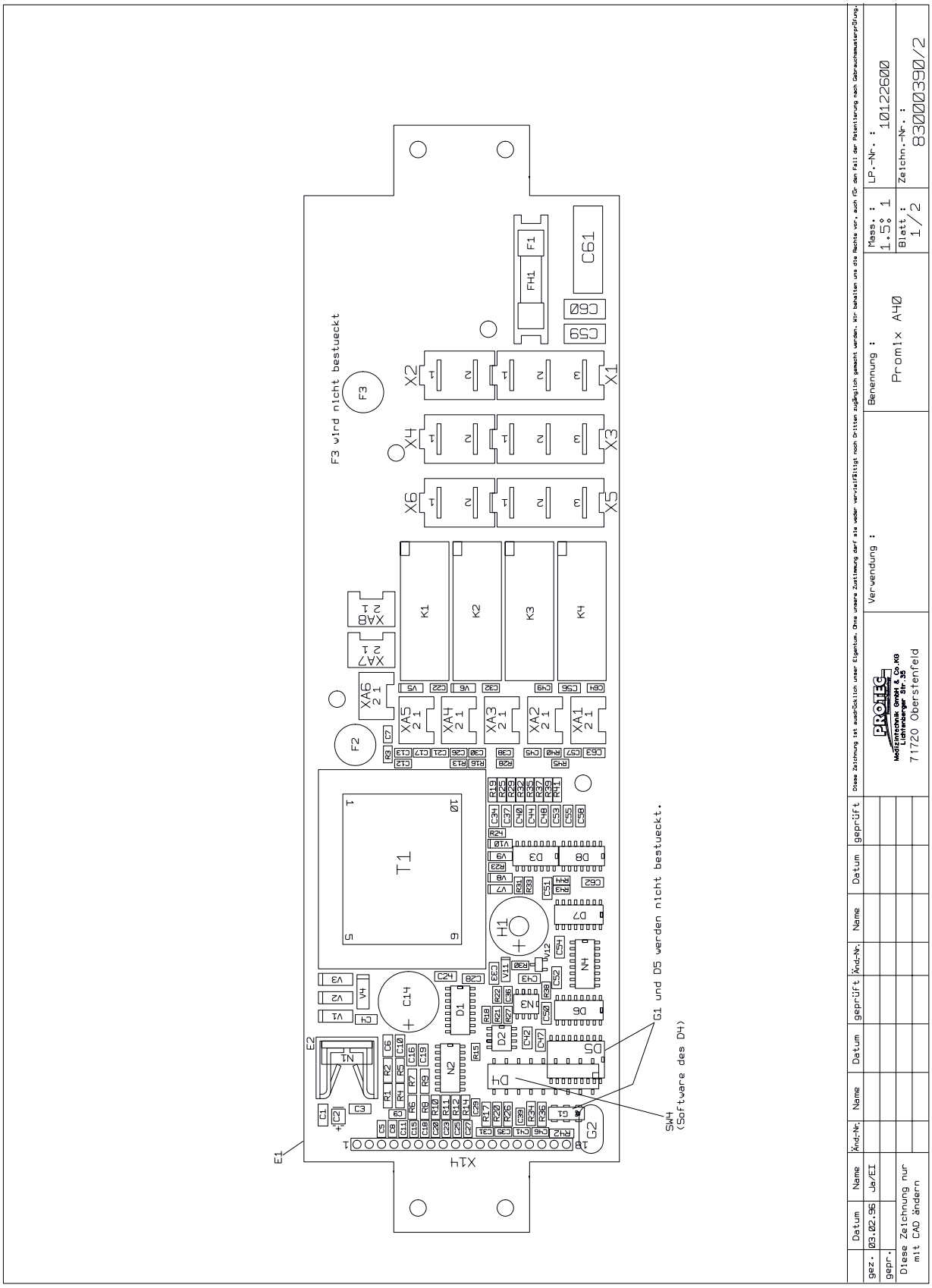
③ Full level - 40 l
Position this float switch in the 30 l, 25 l or 20 l position for mixing volumes of 30 litres, 25 litres or 20 litres.

④ Water stop, emergency shut-off (do not change position)

Pos.	Order No.	Description:
1	0180-5-1000	Controller, complete
2	1180-0-1203	Cable cover
-	2010-0-0009	Fuse 5 x 20 T 2 A / 250 V
-	2004-0-0010	Electrical power cable
-	2028-0-0023	Power switch
3	2006-0-0005	Drain shut-off tap 10 mm
4	1180-0-0106	Flap
5	2031-0-0014	Handle, red
6	2031-0-0015	Handle, blue
7	1180-0-2200	Feed funnel, developer
8	1180-0-2100	Feed funnel, fixer
9	2006-5-0003	Solenoid valve
10	1101-0-0121	Support for solenoid valve
11	0180-1-0800	Centrifugal pump 50 Hz
	0180-2-0800	Centrifugal pump 60 Hz
12	2021-0-0009	Ball check valve
13	1180-0-1400	Mixing nozzle
14	1180-0-1600	Level switch
15	1180-0-0204	Support for level switch
16	1180-0-0202	Securing bracket
17	1180-0-0700	Pump tray, complete
18	2030-0-0015	Ring of cellular rubber 280 x 7
19	2030-0-0016	O-ring 22 x 4
20	2019-0-0006	Elbow fitting, reducing
21	1180-0-0211	Inlet pipe
22	1180-0-0900	Level switch (50 mm)
23	1180-0-0215	Support for level switch (50 mm)
-	2018-0-0001	Water inlet tube
Hose 10 x 2 mm, with fabric inlay		
-	2018-0-0008	Colour red
-	2018-0-0009	Colour blue
-	2018-0-0012	Colourless, transparent
Special Accessories		
-	1180-0-0103	Rear wall
-	1263-0-0000	Carriage


PROMIX A40
I/O
10122600
83000390/3
2/2
+5V
+12V
Strobe
Clock
In_F1
In_E1
In_F2
In_E2
In_F3
In_E3
In_F4
In_E4
D_In
Rel_K3
Rel_K4
Rel_K1
Rel_K2
LSwitch_F1
LSwitch_E1
LSwitch_F2
LSwitch_E2
LSwitch_F3
LSwitch_E3
LSwitch_F4
LSwitch_E4


Verwendung : Promix A40
Benennung : Kontroller
LP.-Nr. : 10122600
Zeichn.-Nr. : 83000390/3
Blatt : 1/2
Gez. 22.01.97 U.Single
Gepr. 20.06.97 Si/Ei
Diese Zeichnung nur mit CAD ändern
+5V
+12V
D_Out
Strobe
Clock
D_In
CS_EE
DI_EE
DO_EE
Rel_K1
Rel_K2
Rel_K3
Rel_K4
Kappe 080.04400


F3 wird nicht bestueckt
G1 und D5 werden nicht bestueckt.
SW4
(Software des DH)
E1
E2
XLH
T1
N1
N2
N3
N4
H1
F1
F2
F3
FH1
C61
C60
C59
X1
X2
X3
X4
X5
X6
K1
K2
K3
K4
XA1
XA2
XA3
XA4
XA5
XA6
XA7
XA8
G1
G2
D1
D2
D3
D4
D5
D6
D7
D8
Diese Zeichnung ist ausschließlich unser Eigentum. Ohne unsere Zustimmung darf sie weder vervielfältigt noch Dritten zugänglich gemacht werden. Wir behalten uns die Rechte vor, auch für den Fall der Patentierung nach Gebrauchsmusterprüfung.
PROTEC
Verwendung :
Benennung :
Promix A40
Mass. : 1.5:1
Blatt : 1/2
LP.-Nr. : 10122600
Zeichn.-Nr. : 830003902
gez. 03.02.96 Ja/EI
gepr.
Diese Zeichnung nur mit CAD ändern